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FORMAT

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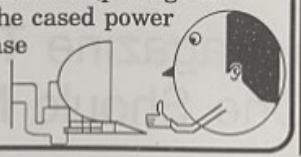

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Other software still available. Send A5 size stamped self addressed envelope for list.

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NEWS ON 4

SHOW TIME

Saturday the 20th April, 10:30am, Quedegely Hall, Gloucester. That is the date for the Spring '96 SAM & Spectrum Show.

Booking forms for stands are available, just ring Jenny and she will send you one. We are also keen to hear from any user who has something interesting to demonstrate.

Be there, or miss out on all the best that SAM & Spectrum has to offer.

RECON SAMS

Too late for last months ***FORMAT***, but included as an insert from West Coast, was the news that they have released a batch of reconditioned SAMs onto the market. Obtained as part of trade-in deals done with some Elite buyers, the machines are fully checked, have version 3 ROMs and a new keyboard. A very limited number are available for £80 + p&p. There are also a number of recon machines available which have the new type drives fitted to replace broken slim-lines. These machines are selling for £129.95 + p&p.

Initial response from the public has been very good with many Spectrum owners taking this opportunity to upgrade at a fraction of the normal cost.

ZX81 INTERNATIONAL

The ZX81 is far from dead. Along with its family of clones, the Timex 1000 & 1500 were the legal ones but there were other illegal machines produced, the ZX81 now has an international support group based in Germany.

They intend publishing a regular English language newsletter and in the first instance you should write to: Peter Liebert-Adelt, Luetzowstr 3, D-38102 Braunschweig, Germany. Enclose 1 International Reply Coupon (obtainable from Post Offices) or 2 IRCs if you live outside Western Europe. Peter will send you details of how you can subscribe and a sample copy of the newsletter.

NEW SPECTRUM GAMES SERVICE

We all suffer from it, the frustration that comes from not being able to get hold of one particular Spectrum game we have always wanted. Well now there is a new service that aims to solve your problems.

James Waddington, of 11, Finsbury Drive, Wrose, Bradford, West Yorkshire, BD2 1QA, has started a new service for Spectrum games players that tries to locate hard to find software for people with a small fee payable only when the search is successful. Write with full details of the program you are after and leave the rest to him.

James would also like to hear from people who have software they want to sell so that he can add to his lists.

MOVING BOOKS

Birmingham computer books distributor Computer Manuals Ltd have moved to larger premises at 205, Formans Road, Sparkhill, Birmingham, B11 3AX.

Computer Manuals, who still have a handful of Spectrum titles on their list, can be contacted on 0121-706-6000.

Credits:- .

URGENT we need your news. Anything you think other people should know about. Each item printed earns the contributor 3 months extra subscription (*please claim when next renewing*).

The Editor Speaks

Top priority this month is the date for the next Gloucester SHOW. It will be on Saturday the 20th April at the usual venue. This is the weekend after Easter so there are few excuses for not coming along. By announcing the show a month earlier than we thought we would, we should be able to get more publicity and boost attendance to a record high.

Last month I announced that we are launching a new magazine, called FORMAT PC, fairly soon (mid March is the current target). Aimed at users of MS-DOS type machines, from the 8086 to the 486, it will cover much the same sort of material as ***FORMAT*** does for the Spectrum and SAM. Few of the magazines now on newsagents shelves cover subjects like programming, adapting software for particular hardware configurations, and few mags want to know machines other than the latest Pentiums running Windows 95.

Please loyal readers, don't get worried, this is not the first 'writing on the wall' for ***FORMAT***. We do look to the increased turnover that the new magazine will produce to bring added benefits for all. We promise ***FORMAT*** will continue for a long time to come.

As I also said last month, I am looking for a sub-editor, to work from home handling some of the work in producing the magazine. But more important at the moment is finding people who can contribute articles and small programs, so if you know a bit about MS-DOS type machines then please get in touch.

OK, back to the Spectrums and SAMs that are so dear to our hearts.

There seems to be a growing problem with Spectrum users unable to track down repair companies. I did ask readers, in a recent issue, to tell me about repair companies they have come across which are still handling Spectrums. However, sadly, we have had not one single letter on the subject. There must still be some people who do Spectrum repairs surely? Come on readers, all I need is an address and telephone number scribbled on a piece of paper. Another problem I've become aware of in recent months is the shortage of 3" discs for the +3. Both the suppliers we have used in the past have now stopped doing them because their importers are not stocking them anymore. Although +3 has always been in the minority with the Spectrum fraternity it would still be sad if owners could not continue their computing just because of the lack of 3" discs. Any news of a reliable supply would be very welcome so drop us a line if you know of one. Please help me, on either of these two problems, so I can help others.

Talking of helping others, it has been a long time since I mentioned ***FORMAT***'s Technical Hotline, and from a couple of calls I've had recently it is about time I rectified that omission. The hotline is open from 11am to 4:30pm Monday to Friday on the usual 01452-412572 number. It is also open many evenings (except Sunday) from 7:30 to 9:30pm. Although I can't guarantee the evening service, family commitments sometimes have to take priority, I do try to be available as much as possible so keep trying if at first you get the answerphone.

Until next month.

Bob Brenchley, Editor.

West Coast Computers

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Gloucester, GL4 0LE. England.

Below you will find details of the full range of SAM hardware now available.

CODE	DESCRIPTION	PRICE
	COMPUTERS - Now with extended two year warranty.	
W1020	**SAM *élite*** - 512K - Single Drive. 512K RAM, Built-in Printer Interface, Scart cable for direct connection to monitor or scart TV.	£199.95
W1021	**SAM *élite*** - 512K - Dual Drive. As W1020 but with twin disc drives.	£259.95
W1025	SAM Coupé - 512K - Reconditioned but with new modern style drive fitted, V3 ROM, new keyboard, 6 months full warranty. Limited availability.	£139.95
W1026	SAM Coupé - 512K - Reconditioned with single slimline drive, V3 ROM, New keyboard, 90 day warranty. Very limited availability. Ideal first step into the world of SAM.	£90.00
	INTERFACES (work with both SAM *élite* and SAM Coupé unless otherwise stated)	
W1101	SAM Disc Drive Upgrade. Have a second drive fitted to your SAM *élite* or a replacement/second drive for your Coupé. Fitting and return postage included in price. Ring 01452-412572 for instructions on how to send your computer.	£79.95
W1124 ** NEW **	SAM Coupé Disc Upgrade Kit Version 2 - all you need to upgrade to a twin drive machine or to fit a replacement for your existing drive. Needs reasonable soldering skills to fit. Comes complete with all instructions & components. All you need is a standard 3½" drive mechanism.	£29.95
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W1108	Internal 256K Upgrade (for older SAMs with only 256K of memory).	£34.95
W1109	*TWO^UP* allows 2 interfaces to connect to SAM expansion port at same time.	£19.95
W1401	SAM Power Supply.	£24.95
W1402	SAM Power Supply with TV Modulator.	£34.95

Prices valid until 1st June 1996. E.& O.E.

Ordering: Write your order clearly, state your name; full address and phone number and quote your INDUG number (if you are a member) as this helps to speed orders. **Payment**: Cheques and UK Postal Orders, should be made payable to **FORMAT PUBLICATIONS**.

Postage & Packing: Price includes UK P&P. European customers add 15% for delivery, other overseas customers please write for quote. Overseas customers can pay using the ***FORMAT*** foreign exchange scheme.

STOP PRESS

We would like to hear from a hardware designer with experience working with RAM to help in the development of a new version of the 1Mb RAM Pack for SAM. We would also like to have ideas from any SAM owners for new hardware projects.

SHORT • SPOT

YOUR HINTS, TIPS AND PROGRAMMING IDEAS

Edited By:- John Wase.

A Happy New Year to you all. A Better New Year for Yours Truly: well, I thought it was going to be better until technology let me down. Quite apart from missing the deadline with January's Short Spot, let me tell you all about it and give you a little New Year Chuckle at my expense. As you know, I type 'Short Spot' on the kitchen table (not many words, but gives you marvellously sore thumbs) well, on an IBM PC-compatible on the kitchen table, then. It's nice and warm there, and I can go upstairs and try things out on a SAM or a Spectrum, without having to disturb what I am typing. Indeed, since I have this New Technology Notebook, Pentium and all that, I can even carry it upstairs without having to turn it off, and carry on if I really want to describe something. Such is my dedication to all ***FORMAT*** readers that on Christmas Eve, when the family went out, I dragged the computer out to do a bit to the current 'Short Spot'. Brought it down from my bedroom, and plugged it in. Failed to notice that the kettle-plug was not properly in the power-pack! Typical Wase!

Well, the little lights came on and off again, and on and off..... Wase sat, momentarily transfixed, before he managed to reach the 'Off' switch.... All too late.

I know my files are there. It makes all the usual start-up noises. 'Windows' can be induced to start by typing 'Win' and pressing <enter> and makes its usual jangle when it arrives. And when it departs. But, there's no screen. The damn thing's got amnesia in the communications department. So although there's lots of files, half-finished, in there, it won't tell me what they are. And being Christmas, the firm reopened on January 3rd.

Today is the 4th of January. I've taken the beast to London, and they're keeping it in the sick bay. I need to be in the sick-bay, too. I'm pig-sick.

There's a moral in this. Whether it's Christmas or the New Year, and whether it's a Cray, A Pentium PC, an Apple-Mac, a SAM or a mere 48k Spectrum, it's better to check that all the plugs and wiggly bits are pushed firmly into their electrical sockets BEFORE the power is switched on. And, in spite of the Arrogant Bill Gates (who tries to prevent this), to back up your files in duplicate on floppies. Wase has learned. Again. By experience! Now go on. Laugh like drains, you rotten lot.

You remember Martyn Bader's delightful list of computer-speak last month? Good: now, here's some more.

Laser Printer: A xerographic copying machine with additional malfunctioning parts.

Dot Matrix Printer: An electro-mechanical paper-shredding device.

Videotext: A moribund electronic service offering people the privilege of paying to read the weather on their TV screens instead of having Ian McCaskill read it to them for free while they brush their teeth.

Hard Disc: A device that allows users to delete vast quantities of data with

simple mnemonic commands.

AUTOEXEC.BAT: A sturdy aluminium or wooden shaft used to coax hard discs into working properly on MS-DOS machines.

CONFIG.SYS: Used to coax AUTOEXEC.BAT into performing properly.

Systems Integrator: A former consultant who understands the term 'AUTOEXEC.BAT'.

CD-ROM: A storage device sufficient to hold the billions of predictions claiming it will revolutionise the information industry.

Well, that's the lot to start the new Year. Many thanks again, Martyn.

You know, our inventive readers have been at it with the electronic equivalent of a pen and pencil over the Christmas Break. Firstly, Peter Williamson of Sleaford sends a nice little program for SAM called 'doodle'. This little program shows up clearly the vagaries of SAM's random number generator. If equal weight were given to the numbers generated (would this then be truly random?), then the program might be expected to draw a pattern centred on mid-screen. As it is, the pattern wanders around and produces some quite interesting patterns before it finally wanders to the screen boundary and initiates an error condition.

Just type it in and see!

```
  5 LET YRG=100,XRG=100
 10 LET B=0,C=0
 20 LET XOS=.5*XRG,YOS=.5*YRG
 30 PLOT 0,0
 40 DO
 50 LET A=RND(4)
 60 IF A=0 THEN LET B=B+1
 70 IF A=1 THEN LET B=B-1
 80 IF A=2 THEN LET C=C+1
 90 IF A=3 THEN LET C=C-1
100 DRAW TO B,C
110 LOOP
```

The Spectrum, too, is not neglected. In this little bit of fun from Roy Burford, of Norton, Stourbridge, West Midlands, Roy presents his Spectrum adaptation of a program from 'Fun Mathematics on your Computer'. This program plots functions with two variables in three-D representation on our two-dimensional screen. The original had a 1 to 5 menu from which a function was selected. However, the conditional checks for function for each point slowed the plot down from adagio to glacial, and so Roy's broken the program down into five sections, each giving a faster, though still slow, plot in Basic.

I know that all sounds pretty boring. Now let's get the interest. Type in the program 'surface1' and run it.

```
  1 REM C.Kosniowski. Fun Mathe
    matics on your Microcompute
    r. Cambridge University Pre
    ss. 1983. p135. Surfaces.
  2 REM Revised on ZX Spectrum+
     128K by B.C.R.Burford 1110
    95.
120 LET sx=255: REM Hires scree
    n columns
130 LET sy=175: REM Hires scree
    n rows
150 LET hy=sy/2
160 LET hx=sx/2
170 LET s=SQR 2
180 LET aa=hx*s/2
190 CLS
450 PRINT AT 21,0;"Surface 1
              z=-cos(r)"
510 FOR a=-aa TO aa
520 LET max=-hy: LET bb=aa+a-5*
    s*INT ((a+ABS (a))/(5*s))
540 FOR b=-bb TO bb+s*2 STEP 5
550 LET x=s*(a+b)/2: LET y=s*(b
    -a)/2: LET r=SQR (x*x+y*y)
590 LET z=-10*COS (r/5)+b
700 IF z<max THEN GOTO 760
710 LET max=z: LET u=hx+a: LET
    v=hy+z*s/2
740 IF v<0 OR v>sy THEN GOTO 76
    0
750 PLOT u,v
760 NEXT b: NEXT a
780 PRINT #0; AT 1,0;"Again?  Y
    /N:": PAUSE 25
790 LET k$=INKEY$: IF k$="" THE
    N GOTO 790
800 IF k$="y" OR k$="Y" THEN GO
    TO 190
900 STOP
```

Good, innitt! Now merge in 'mersur2'. C'mon, it's not very big, is it...

```
450 PRINT AT 21,0;"Surface 2
              z=exp(-rxr)"
590 LET z=75*EXP (-r*r/600)+b
```

This produces the program 'surface2'. And now, run that one, too. Nice one! We'll look at the other three in another issue. Many thanks' Roy.

Meanwhile, I must rush on. As usual, I'm late, and Bob's threatening to go to press without me if I don't let him have some copy. Which is why I'm typing this when I should be in bed, for I have a busy day tomorrow. That said, I just haven't time to fathom just what Stephen is doing. But I'd better start from the beginning.

Stephen McGreal of Chulmleigh, Devon, sent me a Christmas Card depicting Happy Little Bunnies (many thanks Stephen) and a problem. Essentially, what he said in his letter is this. He programs a lot in GamesMaster, but his grasp of Basic is dodgy. This is a small and fairly useless program which he originally wrote for a BBC to annoy the teachers. Here, it is converted for SAM. Just change the line numbers to fit it into another larger program, and it will make SAM crash nastily. "This," says Stephen, "Is probably in bad taste after the recent news about Chris Pile, but as far as is known, the program can't actually damage SAM." There is a little problem: the crash program itself still has a few bugs in it. Stephen explains that he is new to SAM Basic, and he can't seem to jiggle the variables about. Sometimes the program stops with either 'Scroll?' or 'Invalid Colour'. Perhaps some of our readers can help a poor, bad programmer!!!

Anyway, here's the snippet...

```
 10 REM "Bug" by Stephen Mc Gr
    eal
 20 DO
 30 LET x=RND(18): LET Y=RND(3
    0): LET c=RND(70): LET s=R
    ND(131)-60: LET p=RND (15)
 35 IF c>=18 AND c<=21 THEN GO
    TO 30
 36 PEN p: BORDER p
 40 PRINT AT x,y; CHR$ c
 50 BEEP 0.2,s
 60 LOOP
```

The words are Stephen's. As I have to motor down to Gloucester with this, I haven't now time to sort this shambles out. Can you?

Now a few words from John Cleveland of London, who read Mark Sturdy's PCG DTP tips and adds a few of his own. John mentions that he has used PGC's DTP kit on a Spectrum +3 for many years, and when he bought a twin-drive SAM Elite a few weeks ago, lost no time in installing it, and... noticed one or two oddities. Like when you select Drive 2, the program ignores you and stubbornly continues to address Drive 1. The solution is a couple of tweaks to the Basic 'WORD' or 'AUTOWORD' file.

First, Amend line 15 to read:-

```
15 LET L=PEEK 57470: DEVICE d
   (PEEK 96339-48): GOTO L
```

And secondly, replace DIR 1 in line 50 with: `DIR PEEK 96339-48` or, if you are using MasterDOS, by the more elegant `DIR *`.

John's experiences with the Spectrum+3 have taught him just how useful it is to have set up a RAMdisc for storing temporary files, so his next step was to set up a MasterDOS RAMdisc (Drive 3) by, for instance, inserting a new line in the Wordmaster Basic as follows:-

```
502 FORMAT "d3",2,22: REM 100K
    RAMdisc
```

To access this from the file-handling menu one needs the following additional alterations to the Basic:

Firstly; after `LET L=PEEK 57470` in line 15, insert: `LET LL=L:`

Secondly, insert the following new line:-

```
337 IF  LL=40 AND  a$="3" THEN
      POKE 96339,51: GOTO 10
```

Now, at the file-handling menu, all you have to do is to hit E, then type 3 and hit Return (as if you were going to ERASE a file named '3') and, thanks to the DEVICE command in line 15, Drive 3 is selected as shown in the menu. All right; perhaps this IS a bit of a cheat, but it's simple, effective and useful.

Next; cosmetics. It is well-known that if you don't like Wordmaster's tatty-looking character set (which originates from the "wm3" CODE file), you can replace it, for instance, with the smarter 'minicharsW' font published in issue 23 of 'Outlet' (July 1989), or one of those I've included in ***FORMAT*** from time to time; there are quite a number, and another coming up just below. What is not so well-known is that the address to load it to, given in the Wordmaster manual, is the Spectrum address; namely 64512. The correct SAM address is 97280. Before re-saving a version of "wm3" with your new font, do make sure that the internal file-list (shown by selecting Q in the file-handling menu) is empty. You can use line 1000 to save all the changes listed above.

John also mentions that with regard to Mark Sturdy's comments about file conversion, PC SUITE includes a utility which will convert both ways between Wordmaster and Tasword. He's currently working on some more tips of this type, and we look forward to including them in a later issue. Many thanks, John.

Finally, a note from our evergreen contributor from South Africa, Mr L.G. Baumann. Nice to hear from you again. He uses the old Tasword 2 quite a lot, and went for 'squarer' letters, rather than the standard ones. This program does it. When you have got your squarer letters, well you can save them and use them in SAM in Wordmaster, for instance, or in any other similar word-processor.

The instructions are also in the program, but just to make sure:

1. Load Tasword 2 fully.
2. Without clearing the computer, Load Mr. Baumann's 'charalter'.
3. Run 'charalter', and follow the easy prompts.
4. SAVE the new code. A SAVEing line is in the program if you need it.

The program will also let you make changes repeatedly until you get the most desirable shaped character. When a character is chosen for attention, the screen will display a Matrix, Addresses and Codes, and also the letter as it will appear in Tasword. All you really have to do is to enter 8 figures, and see what the new letter looks like. Enter spaces for lines on the matrix that are not to be changed. While you are using the program, you can, at any time, go into the Tasword screen merely by stopping the program and entering GOTO 5000. To get back to 'charalter' from Tasword, merely enter STOP. All characters from '!' (Code 33) to '@' (Code 127) can be changed: it's a good idea to put a few lines of text into Tasword, so that you can see the changes in actual use. Just type it in and try...

```
 10 LET on=PI/PI: LET ze=NOT PI
    : POKE 23609,25: REM L G Ba
    umann
 20 PRINT AT PI,PI;"CHANGE CHAR
    ACTER PROGRAMME"
 30 INPUT "Which character? (or
     ""STOP"") "; LINE a$
 40 IF a$="" OR LEN a$>on THEN
    GOTO 30
 50 IF a$="" THEN STOP
 60 IF CODE a$<33 OR CODE a$>12
    7 THEN GOTO 30
 70 CLS : PRINT AT 4,7;"8421"
 80 FOR x=64 TO 88 STEP 8: PLOT
     x,72: DRAW ze,64: NEXT x
 90 FOR x=136 TO 70 STEP -8: PL
    OT 64,x: DRAW 24,ze: NEXT x
100 LET n=61192+8*(CODE a$(on)-
    33): REM Tasword Chars
110 LET t=5: LET p=103: LET k=z
    e
120 FOR f=n TO n+7
130 LET k=k+on: PRINT AT t,ze;f
140 LET h=PEEK f: IF h>15 THEN
    PRINT AT t,13;"=";PEEK f; A
    T 17,ze;"The code in ";f;"
    exceeds 15 -  correct it w
    ith a direct POKE": STOP
150 LET v1=10: LET v2=139
160 LET h=(h/2)
170 IF h=ze THEN GOTO 200
180 IF h-INT h>.5 THEN PRINT AT
     t,v1;"¤": PLOT v2,p: REM c
    apsshift/graphics and capss
    hift/8
190 LET h=INT h: LET v1=v1-on:
    LET v2=v2-on: GOTO 160
200 PRINT AT t,12; BRIGHT 1;k;
    BRIGHT 0;"=";PEEK f
210 LET t=t+on: LET p=p-on
220 NEXT f
230 CIRCLE 138,100,12
240 PRINT AT 8,24;"As  it"
250 PRINT AT 9,19;"<-- shows on
    "
260 PRINT AT 10,22;"the screen"
270 BEEP .2,p/PI: BEEP .1,p/PI:
     INPUT "Pokes Wanted? - For
     a 2-digit Noput 'z'+2nd di
    git (""ENTER"" for anew cha
    racter or ""STOP"" to Stop)
    "; BRIGHT 1;"12345678"; BRI
    GHT 0;"+++++
        "; LINE p$
280 IF p$="" THEN CLS : GOTO 20
290 FOR f=on TO LEN p$: IF p$(f
    )="" THEN STOP
300 IF p$(f)="z" OR p$(f)=" " O
    R (CODE p$(f)>47 AND CODE p
    $(f)<58) THEN NEXT f: GOTO
    320
310 GOTO 270
320 FOR f=n TO n+7: IF p$(on)="
    z" THEN GOTO 370
330 IF p$(on)=" " THEN GOTO 350
340 POKE f,VAL p$(on)
350 IF LEN p$=on THEN GOTO 70
360 LET p$=p$(2 TO ): NEXT f: G
    OTO 70
370 POKE f,10+VAL (p$(2)): IF L
    EN p$>2 THEN LET p$=p$(3 TO
     ): GOTO 390
380 IF LEN p$<4 THEN GOTO 70
390 NEXT f: GOTO 70
400 STOP
5000 CLS : RANDOMIZE USR 64330:
     RUN : REM To re-enter Taswo
     rdII
6000 CLS : PRINT ''"1. First LOA
     D TaswordII fully."
6010 PRINT ''"2. Then LOAD this
     Pgm without  clearing
     the computer and  RUN
     it - follow the prompts"
6030 PRINT '"3. If you want to g
     oback into  Tasword at
     any time enter  GOTO 5
     000 - To get back  in
     to this pgm again enter
       ""STOP"""
6040 PRINT '"4. When finished SA
     VE the whole  of the alt
     ered Code.i.e.SAVE  ""tas
     word""Code 54784,10751
       and use it in place of th
     e  original Code": STOP
9990 SAVE d1"taschange" LINE 600
     0: STOP
9995 SAVE d1"tasword"CODE 54784,
     10751: STOP
```

Many thanks, Mr Baumann.

And that's really all. I have very few bits and pieces in spite of this being a two-month offering, so do, please keep them coming, and I'll try and keep putting an interesting column together. Please send them to:-

John Wase,
Green Leys Cottage,
Bishampton,
Pershore,
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Alternate Character Sets IN TASWORD 2

By:- George Siougas.

I think that the best way to explain my conversion of Tasword 2 is to describe my problem: I am from Greece and I think you all know that the Greek alphabet is a lot different from the Latin one. Printers which are imported here usually have a pre-defined Greek character set. The problem is that the CHR$ codes for these special characters are from 128 to 175 and 224 to 240, and are quite misplaced.

Word-processors which are imported, for large computers that is, are modified so they can switch between the Greek and Latin alphabets, with just a combination of two keys. As far as the Spectrum is concerned, I had to do something on my own...

Downloading (into the printer's RAM) Greek characters in the ASCII equivalence would be possible, but then I would have had to define a lot of fonts (which were already pre-defined), italics characters, condensed etc. So what I decided to do was produce a simple printing routine, which could work out the appropriate code that had to be sent to the printer to get the right character to print out.

Finally I managed not only to print Greek characters using Tasword 2 but also to switch between the Greek and the Latin alphabet! What I mean is that now, I can print a Greek text, which contains English words too! I achieved it by forming a control code that can be used in the text and 'tell' the printer which alphabet to print.

The control code I formed is the copyright symbol, as it isn't a standard ASCII character, and it is not printed by the printers; it just sends the code 127, whose normal operation is to delete the last character in the printer buffer, which I think isn't much use in a word processing program.

Of course, I have to explain that it is not possible to display both of the alphabets (Greek/Latin) in the screen, so I modified the character generator of Tasword 2, which is a table from 61184 to 62079 in Tasword's code (there was a very good 'TasCharEditor' program published in ***FORMAT*** Vol.6 - Nº.10), to display the Greek alphabet. Now, each time I want to print an English word or phrase, I just enclose it in copyright symbols, and although it still appears in Greek letters on the screen, it is printed in English characters. (Well, actually there is a trick to make it appear in Latin letters, just to check the correct spelling, by changing to the 32cpl window of Tasword 2, which uses the standard character set in the Spectrum's ROM; although now, the Greek words appear in Latin letters too...)

So, no matter what letters you decide to appear on the screen, as far as printing is concerned, you can switch between the normal chr$ set (Latin) and an alternative one which is completely user-defined.

My routine could also be useful for

countries which have Latin alphabet, but some special characters as well, like the German Ü. Of course even the English users could be interested, as they could use the alternative chr$ set for mathematical symbols etc.

Now to the real job! Having disassembled Tasword 2, I found the following code:-

```
60812 LD A,(DE) ;loads A with th
      e chr$ code
60813 INC DE ;increases the addr
      ess of the file
60814 CP 128 ;compares A with 12
      8
60816 JR C,60823 ;if A<=127 then
       jump
60818 CALL 60828 ;call if A>=128

60821 JR 60793 ;and jump back to
       loop
60823 RST 16 ;print CHR$ in A
60824 JR 60793 ;jump back to loo
      p
60826 JR 60793 ;?????
```

As you can see JR 60793 was used twice and I really don't know why. Anyway this gives me just the space I needed to add a CALL:-

```
60823 CALL 23760 ;call my printi
      ng routine
```

To make the modification above, add the direct commands below:-

```
CLEAR 50000
LOAD d1"T2 m/code"CODE
POKE 60823,205
POKE 60824,208
POKE 60825,92
SAVE d1"T2 m/code"CODE 54784,107
     51
```

So my printing routine must be placed in a REM statement at the start of the Tasword's Basic program. At first you must add the Basic line:-

```
  1 REM XXXXXXXXXXXXXXXXXXXXXXX
    X... (176 Xs)
```

Then type the direct command:-

```
POKE 23756,0
```

to make the line above uneditable (i.e.:line 0; just for security reasons). Then you need a small section of machine code (see the listing later if you don't own an assembler):

```
        ORG 23760
;where to place the routine.
        CP 127
;is A=127(the copyright symbol?)
        JR Z,SWITCH ;jump if so.
        PUSH HL ;save HL.
        PUSH AF ;save AF.
        LD A,(FLAG)
        CP 0
;check if the flag is set to 0
;(0:normal / 1:alternative
        JR Z,NORMAL ;jump if yes
        POP AF
;restore AF (comes here if flag
      is 1).
        LD H,93
        LD L,A
;make HL point into a table from
;23808 to 23935, depending on A
;i.e.:LD HL,23808(93*256)+A and
;load A with LD A,(HL)
;it's alternative value, which
;is kept in the table above.
;
PRINT   RST 16 ;print CHR$ A.
        POP HL ;restore HL.
        RET ;return to tasword c
      ontrol.
NORMAL  POP AF
;restore AF -come here if flag=0
        JR PRINT
;and jump, printing the normal
;chr$ set.
SWITCH  LD A,(FLAG)
;let A=flag value. (comes here
;only when a copyright symbol
;is reached in the text)
        XOR 1
;if A=0 then let A=1
;but if A=1 then let A=0.
        LD (FLAG),A
;load flag with the new value.
        LD A,32
;load A with the ASCII code for
;a space, so as to print a space
;instead of chr$ 127
;(we need to print something or
;else the justification would be
;ruined).
        RST 16 ;print CHR$ A.
        RET
;return to tasword control.
FLAG    EQU $
;make FLAG=current address.
        DEFB 1
;make flag hold value 1 for the
;first time, so as to print the
;alternative ;chr$ set until the
;first copyright symbol is
;reached in the text.
;If you want the opposite then
;make it: DEFB 0
;(e.g. English users who just
;need the alternative set for
;special occasion)
        NOP
        NOP
        NOP
        NOP
        NOP
        NOP
        NOP
        NOP
        NOP
        NOP
        NOP
;unused memory from 23797 to
;23807 - enter 11 NOPs
```

What you now have to do is create the table from 23808 to 23935 and make it hold the character codes you want to be sent, instead of the normal ones. The best way to do it, is by copying in these addresses the normal character codes and then modify those we want. Let me give you a little Basic line for copying the normal codes:-

```
FOR n=0 TO 127: POKE 23808+n,n:
    NEXT n
```

Say for now, you want to modify this alternative chr$ set (which up to now is exactly the same as the normal one), so as when you type ']' (this is EXT SS U), you want it to be printed as a "u" with two little dots over it (Ü from the German alphabet). You need to find the ASCII code of ']' which is 93 and the code which your printer needs so as to print a 'Ü' (on my printer this code is 154). What you have to do now is:-

```
POKE 23808+93,154
```

That's all! Now every time you print your text file, and a ']' is in it, a 'Ü' will be printed! But if you need to print a real ']' somewhere, you have to enclose it in copyright symbols (so as to select the normal chr$ set).

After making all the modifications you want, you have to save the Tasword 2 Basic by typing:-

```
SAVE d1"TASWORD" LINE 15
```

A final thing to mention is that if you decide to put a character you need in a character like ']', which is an EXTENDED mode character, you will have a little problem with the FIND/REPLACE option of Tasword 2, which only lets you to input unshifted characters. The solution is replace the GOSUB 6000 of Tasword's BASIC lines 3012 and 3030, with:-

```
INPUT LINE a$: PRINT 'a$
```

and now the normal ROM input routine will be used instead of Tasman's subroutine. But remember! You must always take care of leaving the cursor in 'L' mode before you press ENTER.

Note: There are some rare occasions, where the right justification is ruined, because I made my routine to print a 'space' character in the place of the copyright symbol. This occurs when the copyright symbol happens to be the first or the last character of a fully justified line. The only thing you can do, is try to avoid this. But DO NOT alter my routine so as not to print the 'space' character; the effects are much worse!

I hope you found the conversion above, useful enough. I'd also like to let you know, that I've achieved the same for

WordMaster too and Bob has promised to print this in a future issue. In the meantime, for those of you don't own an assembler, here is a program to poke the code into memory.

After saving the modified Tasword 2 code (as explained above), you should reset the computer. Then enter the following program:-

```
 1 REM
   XXXXXXXXXXXXXXXXXXXXXXXXXXXX
   ... (176 Xs)
10 POKE 23756,0: REM makes the
   line above, uneditable
11 FOR n=23760 TO 23807: READ
   m: POKE n,m: NEXT n
12 DATA
   254,127,40,20,229,245,58,24
   4,92,254,0,40,8,241,38,
   93,111,126,215,225,201,241,
   24,250,58,244,92,238,1,
   50,244,92,62,32,215,201
13 DATA 1: REM or 0 for
   printing normal chr$ set at
   first
14 DATA 0,0,0,0,0,0,0,0,0,0:
   REM unused memory bytes
15 REM the rest of the program
   copies the normal chr$ set
   in the table from 23808 to
   23935 and then asks for
   your modifications.
16 FOR n=0 TO 127: POKE
   23808+n,n: NEXT n
17 FOR n=33 TO 126
18 PRINT "Type code to be
   sent,"'"in the place of
   ";FLASH 1;CHR$ n;FLASH 0;"
   character"
19 INPUT "(ENTER to leave
   unchanged): "; LINE a$
20 IF a$<>"" THEN POKE
   23808+n,VAL a$
21 CLS: NEXT n
```

and RUN it. When you finish, delete lines 10 to 21 (only line 0 should remain), then add the direct commands:-

```
CLEAR
MERGE d1"T2"
SAVE d1"T2" LINE 15
```

And something more! My original version of Tasword 2, ruins the justification each time I use the graphic/printer control characters. To avoid this press 'SS A' to get into the menu, then press 'G' and 'ENTER' to display the printer control graphic characters and make the modifications:-

1) Add code 32 as the last code for the graphic characters: 131,132,133,134
2) Add code 32 as the first code for the graphic characters: 137,138,139,140

Now each time a graphic/printer control character is in the text, it not only does what it should do, but also prints a 'space' (CHR$ 32) and so keeps the right justification OK.

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The HELP PAGE

Edited By:- Ray Bray.

It is good to be back again after such a long break without any problems being sent in. I suppose I should feel delighted that you are all having such trouble free computing but I do miss reading your letters and finding answers to your queries.

Actually we did receive one query during this period which came from Eric Day of Porthcawl in Glamorgan, who took delivery of a SAM Elite in April 95 to replace his original Coupé purchased in 1989. After a few weeks the Elite would only boot in mono so Eric sent it for repair but it was returned with a note stating that no fault could be found. Although it would still only boot in mono, the colour would come back after about a quarter to half an hour. This was a baffling problem for, as the check had revealed no fault, it could have been any number of components which were intermittently operating below par. Fortunately, Eric met a friend who suggested that the power unit might be operating at a low voltage or with a fluctuating current. Still having his original SAM PSU, he connected it up to the Elite and, lo and behold, it booted up in full colour and has continued to do so ever since. All I can say is that it was unfortunate that the fault was not found when it was sent in for repair but these things do seem to happen occasionally, as I found out with a TV set which refused to show a fault when in the repair man's workshop!

The next question comes from M.Chapman of Renishaw, Sheffield who bought a SCART lead to connect up his SAM to a video recorder/TV manufactured by Bush/Goodmans. However he found that the socket on the machine did not correspond to the SCART connections used on the standard SAM lead. Fortunately he was able to send me a copy of the pin connections on his machine which shows that the input used is a composite video signal, which simplifies the connections required. The diagram below shows which pins on the video/TV plug have to be connected to those on the SAM SCART plug.

```
VREC/TV                    SAM SCART
  Pin                        Pin

   2  --- Right Audio ----   1
   4  --- Audio Ground ---   4
   6  ---- Left Audio ----   3
  20  -- Combined Video --   19
  21  ------ Ground -------  21
```

Our next contributor is Steve Fletcher, again from the Birmingham area, has several queries. Firstly he has a disc drive from his Spectrum/Plus D which he wishes to connect up as an external second drive to his SAM which already has a printer interface and a mouse interface fitted, and would like to know how to do it. Well Steve, in order to do this you need another interface, the External Disc Drive Interface and Parallel Printer Port (from West Coast Computers), into which you plug your external drive. This interface will take the place of your existing printer interface but, if that one is in fact a Comms. interface, you will lose the RS232 port. In that case you could of course buy the TWOup to allow you to use both, but the cost is now mounting up, and you might as well spend the

money on a new internal drive.

Steve's next question concerns the possibility of fitting a small speaker into SAM to provide the keyboard clicks etc., in place of the TV sound channel, which is terribly noisy. I see no reason why you can't connect a miniature speaker internally to pins 2 and 6 of the power input socket which should prove to be not as noisy as the TV sound output. I trust your SAM is out of it's guarantee period? Reference your query concerning the latest version of FLASH, the version issued with the DOS 2 disc was still V 1.1 but I'm not sure whether a later version has been issued since then. Has anyone any further information on this? Finally, on your question of connecting the Microvitec Cub 653 monitor to SAM, the required connections are shown below. Use of the RGB TTL output (which the Cub only accepts), means that the full SAM colour range will not be available for display on the monitor.

MONITOR Pin		SAM Pin
1	---- Red TTL -----	8
2	---- Green TTL ---	10
3	---- Blue TTL ----	6
4	---- CSYNC -------	16
5	---- GROUND ------	21
6	No Connection	

Our final query this month came from Simon Turk who owns a Spectrum 128K with mouse and joystick interface with a through port to connect a PLUS D disc drive at the same time. He has been using this set-up to work with the 128K version of OCP Art Studio in the past but, having gone through a period of not using the Spectrum, when recently he came to connect everything up again, he found that the mouse would not work with the art package. He thinks that the interface may have developed a fault and asks if there is a quick program to test the interface. If the interface is faulty, where can he purchase a replacement item? Firstly Simon you don't say whether the mouse fails to work completely or just won't track or just won't click, or whether or not it will work with any other software. Assuming that you have no other programs which work with a mouse, did you not receive the usual instructions with the mouse/interface to tell you how you could use it with any programs you might wish to write or modify? Using these instructions it should be relatively easy to write a small program to check the mouse. Have you thoroughly checked all the connections and cleaned them if necessary, and are the ball and rollers in the mouse all running freely? I'm afraid this is all the advice I can offer at this time and can only appeal to any of our readers who might have a program to check the mouse output, or who might know where to find a replacement interface, to write to us and we will pass on the information to Simon.

Finally, a couple of items of information on SAM-C. Two readers have written about problems with SAM-C and on both occasions I was unable to reproduce the faults they were encountering. On checking a copy of their discs it transpired that some of the files did not check out with those on my master disc. On replacing those files with mine everything worked properly. As I did not have access to their master discs two possibilities arise. Either the files concerned were corrupted when they made their copies or their master discs were corrupted whilst passing through the postal service. But this does highlight one problem with getting to grips with C.

The initial difficulty with using SAM-C is that there is no definitive instruction manual to go with it and you have to extrapolate between instructions given in a standard C textbook and the information provided in the SAM-C manual. On most occasions the standard syntax works, but occasionally you come up against a problem which requires quite a bit of trial and error before getting it to work, and at times you are convinced that something is wrong with the system. If any reader has such a problem and has reached the stage of consigning the whole thing to the back of the drawer, do remember that we are here to help and don't hesitate to send your problem to us with as much information as possible, including a disc with your recalcitrant source file on it.

In the meantime here are a couple of tips that might be of help to some of you. I know that I was not alone in having some difficulty in getting the 'string2 .h' functions to work. In the first instance it is necessary to declare the functions in the following format:-

```
utoi(decstr,&nbr)
```

Note the ampersand before the numeric variable name which is needed with the first four functions in the list, otio, utoi, xtoi and dtoi, otherwise the value will not be transferred. It would have been useful to have had example formats for this type of multiple parameter function listed in the manual, rather than just the prototype forms. Some of you who have tried to use the dtoi function might have found that it refuses to assemble. I say some of you because, if you happened to include the function utoi before the inclusion of the dtoi function, then all would have been well. The trouble is that dtoi CALLS utoi so, if utoi has not been declared already, then the assembly will fail. The answer is to include a dummy utoi statement before the dtio statement, however I have a feeling that there is some way of declaring the utoi after the #include statements to ensure that it is assembled, but I can't put my finger on it at the moment.

That's all we have for this month. Please keep sending your problems/answers to the following addresses:-

Anything SAM or General Purpose:-
Ray Bray (***FORMAT*** Help Page),
Spring Cottage, Bourne Close,
Porton, Salisbury, Wilts, SP4 OLL.

Anything +3, CP/M:-
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"But if we open the garden to the public - shouldn't there be something for them to look at?"

A MEDICINAL SPREADSHEET

By:- Antony Drage

Five years ago I was diagnosed as a diabetic after a lengthy illness in which I showed all the classic symptoms of diabetes; weight loss (I lost nearly two stone in weight!), blurry vision, and constant visits to the little boys room. Since being diagnosed I have been monitoring my blood sugar levels on a daily basis. This is important because if my sugar level is too high then in later life I could have an increased risk from heart disease and other illnesses. Monitoring sugar levels involves putting a drop of blood onto a special test strip which is then placed into a small meter. This meter then analyses the blood, and twelve seconds later tells me how good or bad I am. I then write down the result onto a sheet of paper designed to record my results.

This sheet provides a neat reference for a quick scan over the results, but the problem I had was not being able to quickly find out how well I was doing 'on average'. This is particularly important when the local hospital asks for a special blood test which analyses my blood levels over a three month period. It would be nice to be able to have an idea of what sort of results I would be expecting.

There were a number of possible answers to the problem. The first would be to write a program which records and analyses the blood tests on a daily basis. Unfortunately I do not have the time to sit down and write a full scale program. Another answer would be to purchase a commercial program, a number of which are advertised in the British Diabetic Associations magazine *Balance*. However these retail for around £30 to £40, and being a SAM owner I do not have an IBM PC compatible machine to run them on. After sitting down and pondering over the problem, I suddenly came to the conclusion that if I was recording my results on a sheet of paper, then surely a spreadsheet could be designed to record results and calculate the averages.

A number of years ago I typed in a spreadsheet program which was published in the old Input magazine. Still having this, I converted it over from the Spectrum to SAM and set about designing the sheet. This was relatively successful, however because the program was written in Basic it took a long time to move about the screen and even longer to calculate. I then took a monumental decision, delved deep into the pockets, and bought a copy of 'Campion - The Spreadsheet'. This made life much easier especially since it includes functions which automatically calculate the average and also standard deviations.

Using Campion made life much easier, and for fellow diabetics with Campion (and anyone else interested) below is how I wrote the spreadsheet.

1. Set the various column widths as follows using the Width option:-
   Column A set to 8 characters
   Columns B to M set to 6 characters
   Column N set to 40 characters
2. Cell C0 type '$Month:'
   Cell C1 type '$Year :'
3. Cell F0 type '$ Ave:' & G0 the formula 'AVG(F7,M37)'
   Cell F1 type '$Tests:' & G1 the formula 'COUNT(F7,M37)'
   Cell H0 type '$ STD:' & I0 the formula 'STD(F37,M37)'
   Cell H1 type '$ STDS:' & I1 the formula 'STDS(F37,M37)'
   Cell J0 type '$ Min:' & K0 the formula 'MIN(F7,M37)'
   Cell J1 type '$ Max:' & K1 the formula 'MAX(F1,M37)'
4. Cell A4 type '$INSULIN'
   Cell F4 type '$BLOOD'
5. Cell A5 type '$ Date' Cells A7 to A37 fill with the numbers 01 to 31. For formatting purposes when printing, I found that the numbers 1 to 9 are best entered as '$01', '$02', '$03' etc. If they are entered as 1, 2, 3, then I found that the spreadsheet did not come out properly on printing.
6. Cells B5 and C5 type '$ AM'
   Cells D5 and E5 type '$ PM'
7. Cells F5 to M5 fill with the numbers 01 to 08. These numbers should be entered in the same manner as above for step (5).
8. Cell N5 type '$ COMMENTS'.

Next is the task of explaining what the different parts of the spreadsheet are.

Each spreadsheet covers blood tests during any particular calendar month. Therefore in adjacent cells to the 'Month' and 'Year' cells you can type in the relevant month, eg August 1995. The figures below the 'Date' column refer to the particular day of the month, hence 31 numbers.

The AM and PM columns refer to the dosage of insulin injected. I only have two injections a day, one in the morning and one in the afternoon, therefore I only use one AM and one PM column. However some diabetics can take up to four injections.

The columns 01 to 08 under the Blood heading refer to the time of day a blood test was carried out. It is best to take blood tests at certain times before and after injections, and the numbers refer to the following times:-

01: Before breakfast.
02: Two hours after breakfast.
03: Before mid-day meal.
04: Two hours after mid-day meal.
05: Before evening meal.
06: Two hours after evening meal.
07: Before bed.
08: During night.

The comments column is provided to record anything that is note-worthy such as hypo's.

It is possible to start calculating the averages once at least two results have been entered into the sheet. Once calculated the spreadsheet displays the mean average of all the results, the number of tests carried out, the smallest result and the largest results obtained. The sheet also provides details of two types of standard deviation. For those who are not too sure what the standard deviation is, I will try to explain. The standard deviation is the average variation from the mean average (confused!). Lets try again; if you have an average of 6 and a standard deviation of 2, then 'on average' your results will be no higher than 8 (6+2) and no lower than 4 (6-2). It is best to aim for the smallest deviation possible, since this would show that your results do not vary much, and your diabetes is very well controlled. Campion provides two types of standard

deviation and I am not too sure about the differences, but I will explain what I think they are. The first is STD and provides a standard deviation of only the results you have keyed in. This will probably become more reliable as more results are entered. The second deviation STDS assumes that the results keyed in so far are not all the results available but are only part of a much larger 'population'. This function therefore calculates the standard deviation by predicting what the other results in the population are. I think the above is correct, but if anyone else knows please let me now - I included both calculations 'just in case!'.

The spreadsheet is small enough to be printed on a sheet of A4 in condensed mode.

I hope the above is of interest to other people, and also hope that other diabetics will find it of some use.

```
   (...A..)(..B.)(..C.)(..D.)(..E.)(..F.)(..G.)(..H.)(..I.)(..J.)(..K.)(..L.)(..M.)(.....................N.....................)
 0            Month:              Ave:  0.00  STD:  0.00  Min:  0.00
 1            Year :            Tests:  0.00 STDS:  0.00  Max:  0.00
 2
 3
 4 INSULIN                        BLOOD
 5   Date    AM    AM    PM    PM    01    02    03    04    05    06    07    08  COMMENTS
 6
 7     01
 8     02
 9     03
10     04
11     05
```

Sample of the blank spreadsheet (top only)

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C-MATHS

PUTTING THE POINT BACK INTO SAM-C MATHS

By:- Ray Bray.

One of the gaps in the current library of SAM-C functions is the ability to work in decimal numbers or perform algebraeic calculations. Now I realise that not all users of SAM will need these facilities, but it is a fact that real life doesn't only work in integers (witness the £9.99 syndrome of the retail trade), and when you need them there is no substitute for the real thing! There must be many like me who eagerly await the arrival of the definitive SAM-C floating point mathematical functions, however, until that day arrives your needs can be met quite simply by making use of the comprehensive commands available in the SAM Floating Point Calculator (FPC) routines. Now before you switch off muttering that you don't understand machine code, I hasten to say that as far as the user is concerned, no knowledge of machine code is required and all you have to do is to understand simple statements such as ADD, SUB, DIV and MULT - nothing to it is there?

The functions will handle both positive and negative integer and decimal numbers, as well as performing all the standard trigonometrical functions without the user having to know a thing about floating points or exponential notation. If you are not familiar with the use of the FPC then all you need to know is that to perform an operation on or with a number, it must be placed on the FPC Stack (which will be refered to as the stack from now on), and when the calculation is complete, the result is left on the top of the stack with the original values being removed. The main points to bear in mind are:-

1. A mathematical operation is usually performed on the top two numbers on the stack, the first number to be stacked being referred to as N1 and the second (the top number on the stack), as N2.

2. The number to be operated on must be placed on the stack before the operator, i.e. the number you wish to divide or subtract from, must be placed on the stack before the divisor or the number to be subtracted.

3. If the value being operated on needs to be preserved then it has to either be placed in a variable or duplicated on the stack below the two numbers being operated on.

4. If many calculations are being performed, it is as well to remove any numbers from the stack which are no longer required, to prevent the stack from overflowing.

5. To use the FP Calculator the machine code must reside in Block B of memory (16384 to 32767) at the time of operation. As the assembler default for the ORG address is 32768, this must be reset to a lower figure, remembering that SAM-C limits the lowest level to 25856 unless you are experienced in writing machine code. It is therefore suggested ORG be reset to 25900. To do this, select OPTIONS from the main menu, press C for Compiler followed by O for ORG. Key

in the new ORG address and press RETURN, then press ESC twice to return to the main menu.

As well as performing arithmetic and algebraeic operations, FPC functions are also available to to enable values to be deleted from the stack, swapped around, duplicated or reformed. A full list of the standard SAM FPC operations and codes is given in the SAM Technical Manual but, for those who do not have the Manual, I will list them in part 2 of this article. For a fuller description of using the FPC I urge you to read the series "Machine Code Without Tears" by Carol Brooksbank which appeared in FORMAT, however this is for background interest only and is not essential to enable you to use the FP routines.

In order to make use of the FPC routines with SAM-C, the decimal values are entered as character strings and stored as character variables. Special functions have been written to convert the strings to numerical values and back to strings, enabling them to be placed on the stack, operated on and retrieved when required. Those functions will be covered later, but first I will describe the layout of the operative functions which perform the calculations. These are all written in a standard format which makes their production quite simple, if somewhat tedious. However, this can be made a little easier by using the BLOCK/COPY facilities of the SAM-C editor.

Operator Functions

divfp(unsigned int a, unsigned int b)

This is an example of an operator function which is used to divide the value N1, pointed to by int a, by N2 (the divisor), pointed to by int b. Int a and b are usually SAM-C pointers to character variables in which the values are held (as strings), but they can be the numerical addresses of values stored in, say, a table (note that such values must be NULL terminated). The function can be declared in three ways:-

1. divfp(num1,num2) Divides num1 by num2.
2. divfp(0,num2) Divides top value on stack by num2.
3. divfp(0,0) Divides top two values already on stack.

This layout of the function prototypes and the three forms of declaration is used for all the two-value mathematical FPC operators and the form of coding for all functions of this type is shown below. A point to note is that the sub-routines "getaddr" and "operate" are contained in a special function "bootfp()",which is described later. This sub-routine uses the parameters from the functions that call it and so is self-modifying. For those who do not have a copy of the Technical Manual, and who can't wait for the full list of operator codes in the next article, the four basic operator codes are; multiply=0, add=1, subtract=3 and divide=5.

```
//DIVIDE FUNCTION

*   #ifdeclared divfp
*   void divfp(unsigned int a, un
       signed int b)
    {
    #asm
    call getaddr; Fetch addresses
        of N1 & N2 strings.
*   ld a,5; FP code for divide.
    call operate; Sub-routine to
       perform the operation.
    #endasm
    }
    #endif
```

To change the listing above to perform say, addition, all that is required is to change those lines marked with '*'. The first two amendments will be to substitute 'addfp' for 'divfp' and the last change is to substitute 'ld a,1' for 'ld a,5'. The suffix 'fp' is required on all the function names to avoid conflict with any other names or labels used in SAM-C.

Special Functions

Several special functions have been written to simplify the use of the library of FP operator functions and avoid the need to use complex combinations of the standard C functions. Two of these special functions are described below and the remainder will be included in the next article.

bootfp() This is a vital function which enables all the other routines to work. Its purpose is to clear the stack before the intial use of the FP facilities and also to load the sub-routines which most of the operator fuctions will call. It is therefore essential to place this function at the start of the program if the FP library is to be used. No parameters are required to be passed to this function.

fetchfp(unsigned int p, int f) This is used to fetch the result of a calculation from the top of the stack in the form of a NULL terminated string and assign it to a character variable pointed to by it's name, or place it at an address defined numerically by 'p'. The integer 'f' is a flag which, if set to 0 (zero), leaves a copy of the value on top of the stack and, if set to 1, deletes the value from the stack. The type of variable used with this function must be a character array.

The details of the functions described so far are given in the following listings, which I will leave for you to extend to include as many of the arithmetic operators as you might need. Listing 1 gives the function file code and Listing 2 the header file. After entering these listings you should save them on your C working disc as 'FPCALC .C' and 'FPCALC .H' respectively. If you add more of your own functions to the 'FPCALC .C' file, remember also to add the function description to the 'FPCALC .H' file.

An example program is given in Listing 3 illustrating how to use the FP functions to multiply two decimal numbers, leave the result on the stack, divide that by a third number, clear the result from the stack and display it on the screen at a given position.

That is all we have space for at present but it should suffice for you to get started. There are other functions which are needed to enable full use of the FP Calculator facilities and these I will cover in the next article.

Listing 1. Functions File Listing.

```
// FLOATING POINT CALCULATOR FUN
      CTIONS
// By R.W.Bray Dec 1995
//  ++++++++++
// FILE:- FPCALC .C
//
// CLEAR THE STACK & ASSEMBLE
// SUB-ROUTINES
// This must be used before
// using the functions for the
// first time otherwise the
// results will be corrupted.

#ifdeclared bootfp
void bootfp()
{
#asm
;
; Clear the FP Stack:-
ld c,10
bootfp_1:
rst 40
defb 7
defb 51
dec c
jr nz,bootfp_1
jr bootfp_2
```

```
;--------------------------
;Sub-routine to find length of
; string and stack FP value.
;
stknum:
push de ;Save string address.
;
ex de,hl
ld bc,0
stknum_1: Compute strings length
inc c
ld a,(hl)
inc hl
cp 0
jr nz,stknum_1
dec c ;Length in BC.
pop de ;Address.
;
stknum_2:
ld a,0
call 295 ;Convert to FP
rst 40
defb 84 ;Stack FP
defb 51
jr bootfp_2; Exit.
;--------------------------
;Operating sub-routine for
; arithmetic functions:-
;
operate:
ld (operate_3),a
;Set operator code.
ld a,h
cp 0
jr z,operate_2
;No values to stack.
push hl ;Save N2 address.
ld a,d
cp 0
jr z,operate_1
;Only one value to stack.
call stknum ;Stack value N1.
;
operate_1:
pop de
call stknum ;Stack value N2.
;
operate_2:
rst 40
operate_3:
nop ;Operator code.
defb 51
jr bootfp_2
;--------------------------
; Get Variable Address:-
;
getaddr:
pop bc ;RET address.
pop af
pop hl ;N2.
pop de ;N1.
push de
push hl
push af
push bc
;--------------------------
; Exit Point:-
bootfp_2:
nop
#endasm
}
#endif
// FETCH TOP VALUE FROM STACK
// AND PUT INTO A CHAR VARIABLE
// DESIGNATED BY A POINTER, OR
// AT AN ADDRESS GIVEN BY int p.
// THE FLAG int f IS SET TO 1 TO
// DELETE VALUE FROM
// STACK, OR TO ZERO TO LEAVE
// VALUE ON STACK.
;
#ifdeclared fetchfp
void fetchfp(unsigned int p, int
     f)
{
#asm
call getaddr
; Return with DE=address,
; HL=delete flag.
ld a,l
ld (stksto),a ;Store flag.
push de; Save variable address.
call 382
; Convert FP to decimal & exit
; with source address in DE &
; length in BC
pop hl ;Destination.
push de ;Save source.
push bc ;Save length.
;
;Move value into character
;string:-
ex de,hl
ldir
ld a,0
ld (de),a ;Add NULL terminator.
;
; Restack value or exit:-
pop bc
pop de
```



```
ld a,(stksto)
cp 1
jr z,stkfp_1 ;Do not restack.
;
call stknum_2 ;Stack value.
jr stkfp_1
;
stksto: ;Temporary store for
;        delete flag.
nop
;
stkfp_1:  ;Exit.
nop
#endasm
}
#endif

// MULTIPLY SECOND STACK NUMBER
// BY TOP NUMBER
#ifdeclared multfp
void multfp(unsigned int a, unsi
     gned int b)
{
#asm
call getaddr
ld a,0
call operate
#endasm
}
#endif

// DIVIDE SECOND STACK NUMBER BY
// TOP NUMBER
#ifdeclared divfp
void divfp(unsigned int a, unsig
     ned int b)
{
#asm
call getaddr
ld a,5
call operate
#endasm
}
#endif
```

Listing 2. Header File.

```
#ifndefined FPCALC
#define FPCALC
void bootfp();
void fetchfp(unsigned int p, int
     f);
void multfp(unsigned int a, unsi
     gned int b);
void divfp(unsigned int a, unsig
     ned int b);
#endif
```

Listing 3. Demonstration Program.

```
// MULTIPLY TWO NUMBERS AND
// DIVIDE BY A THIRD NUMBER
;
#include "stdio   .h"
#include "fpcalc  .h"
main()
{
char *num1, *num2, *num3, res[10
     ];
num1="12.5";
num2="41.25";
num3="5";
bootfp();
// Multiply first two numbers.
multfp(num1, num2);
// Divide result by 3rd number.
divfp(0, num3);
// Fetch result and delete from
// stack.
fetchfp(res,1);
;
at(10,10); printf("Result= %s",r
     es);
}
#include "fpcalc  .c"
```


FORMAT

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YOUR LETTERS

Dear Editor,

I nearly wrote to you about the listing of C source befor,e because of the snippet of C in my letter in the November issue, in which what appeared on my screen as r- - appeared in print as r--, because you - in accordance with the best practice - used an em-dash for a minus sign. But I see, from Nick Carthey's article 'Autostereogram' in the December issue, that I needn't worry.

The first thing that struck me about this C program was that there were a great many unnecessary spaces. Spaces are awkward in SAM C: what is said about spaces under 'Entering Source' on p.17 of the User Manual is nonsense: the example would be better as, say, a=sizeof (int), illustrating that keywords must have a space after, but don't need a space before. Two-character tokens such as == ++ >= have the same rule. The editor usually, but not always, inserts such spaces if they are not already there.

The layout of a C program is up to the programmer; for instance, you can start a new line whenever you want (unlike Basic). So I think that any programmer submitting a C program to ***FORMAT*** should see that the layout fits the 34-character-line that ***FORMAT*** uses; no occurrence of words half on one line, half on the next. But Nick Carthey must be forgiven! Pioneers meet difficulties and help their successors.

I enclose an excerpt from Nick's program, the draw3D function, laid out with 34 characters or less to the line, in what, I hope, will be an understandable form. There are two schools of thought about the placing of the braces enclosing a block. Nick follows the school in which the opening brace, {, follows the for, if, while, etc that introduces the block, and the closing brace, }, begins a line. I prefer the system in which both the { and the } begin a line. The two braces are in the same column, and, if indentation can be used, there are no other characters in that column between them. This system is used in the excerpt; I think you will find it much easier to see which brace goes with which. Occasionally, a short block can have both braces on the same line; the excerpt includes one such block.

```
void draw3D(int (*z)(int x,int y))
{int x,y,i,j,sep,s,
     same[WIDTH],colour[WIDTH];
 for (y=0;y<HEIGHT;y++ )
 {for (x=0;x<WIDTH;x++ )
   same[x]=x
  for (x=0;x<WIDTH;x++ )
  {sep=z(x,y);i=x-(sep+
    (sep&y&1))/2;j=i+sep;
   if (0<= i&& j<WIDTH)
    {for (s=same[i];s!= i&& s!= j;
          s=same[i])
      if (s>j){same[i]=j;i=j;j=s;}
      else i=s;
     same[i]=j;
    }
  }
  for (x=WIDTH-1;x>= 0;x-- )
  {if (same[x]== x)
    colour[x]=randomBlackWhite();
   else colour[x]=colour[same[x]];
   dot(x,y,colour[x]);
  }
 }
}
```

Remarks are probably better on lines to themselves; the // introduction (User Manual p.27) will save two characters.

Perhaps programmers should be expected to send you two versions of a

C-program: one, an ASCII text specifying what you will print; the other, a program as 'saved' by SAM C, ready to be loaded and compiled if need be.

I had a go at the 'Autostereogram' program but, although I got the stereo effect, what I saw was nothing like a Top Hat, illusory or not. I 'ran' the topHat function with paper and pencil: again, nothing like a Topper. So either I have misread or misunderstood this function, or it has been corrupted in the difficult editing. I couldn't see how to amend it, so I made my own version, with a more or less straightforward Top Hat; copy enclosed (again, suitable for a 34-character line).

```
int topHat(int x,int y)
{int br,hr,bh,u,v;
 br=70;hr=30;bh=20;
 u=abs(x-WIDTH/2);v=y-HEIGHT/2;
 if (v>0)
  return v<br&& u<hr?HAT:GROUND;
 else
  return v+bh>0&& u<br?HAT:GROUND;
}
```

In Nick's program, there is no need to include the lines 'extern void pen ... rand();'. These are part of the included header files "graphics.h" and "stdlib .h".

The randomBlackWhite function uses, in effect, rand()%2 to produce 0 or 1. But the rand() of version 3.2 is bad for this; you get too many consecutive runs of 0s or 1s; a test of 1000 digits gave: 00,475 times; 01,25; 10,25; 11,475 instead of about 250 times each. One of the many ways out would be:-

```
int randomBlackWhite()
{int t1,t2;
 t1=rand();t2=rand();
 return 6*(t1>t2);
// return 0 or 6
}
```

Yours Sincerely, Ettrick Thomson.

Many thanks for your efforts Ettrick. I agree with your comments that authors should keep the 34 character lines in mind when they prepare programs for submission to ***FORMAT***. However, what I would still like to see is a utility that I could run against any C program that would automatically transform a listing into a suitable format for ***FORMAT***...

In the meantime it is just pure hard work, for me, to knock things into shape (which would be easier, I admit, if I really understood what I was doing). ***Ed.***

Dear Editor,

Please find enclosed hurriedly renewed subscription. Are you sure you sent me a first reminder, though? I don't remember getting one with the last issue (although it's quite conceivable that I put it somewhere safe and then forgot about it).

As for 'Format PC', I think it's an excellent idea. I've been working with PC's for a couple of years, but I've never bought a PC magazine, because none of them has caught my interest. Most of them seem to carry 'free' CD's. anyway. and I don't have a CD drive. (Incidentally, given the storage capacity of a CD, why don't they just put the magazine on there too and save printing costs?).

I've got a 486 DX2/66 with 8Mb of RAM, Windows (which I don't use much) and a not-very-big hard disc at home, and a similar machine at work. I use them mainly for programming, using C, FoxPro, Clipper and sometimes QBasic, and I know a bit about MSDOS, relational databases, and Novell. If there's any contributions you want, let me know.

Yours Sincerely, Dave Marriott.

Nice to hear from you Dave, I would welcome anything you would like to produce on the PC side.

As to the CDs, don't people reallize how much they are being conned by the 'far from *free*' CDs which only tend to be full of 'demo' versions and 'limited life' software, with the same program often seeing the light of day on most of the CDs over the course of just a few months. ***Ed.***

Dear Editor,

Hello, its Martin Fitzpatrick here, thanks for the excellent issues of ***FORMAT*** that I've received. I rang well before Christmas to tell you that my address had changed and you told me to write so I've finally got round to it. The thing is the new address is my mums where I live, the old one is the one where my dad lives and I stay at weekends. Changing the address just means I get it earlier.

Suspiciously close to where Nev Young lives (200 metres!), funny that I never realised even though he's been advertising in ***FORMAT*** for ages - I only noticed from your Scotland show report. And to think I thought Barnoldswick was a miniature little town out in the middle of nowhere.

Another subject now, I quite regularly read back issues of ***FORMAT*** I noticed that quite a few people have been complaining about 'C' and asking for articles on it. If you're interested I can do a set of articles for you, I'm not quite sure what sort of thing to put in them, I was thinking that maybe I could do a program each month, getting more and more complex as the series went on. Each with notes on the program, and suggestions of changes to be made if you see what I mean. Either ring me or write back.

A few issues ago you were mentioning the idea of setting up local computer groups for the SAM, Spectrum and other computers. Have there been any developments with that yet?

Yours Sincerely, Martin Fitzpatrick.

Barnoldswick is a sleepy little town in the middle of nowhere. That's why Nev likes it so much. (That and Julie of course - Hi Julie, see you soon.)

Anyway. Yes, we would love to see anything you can produce on the C front. We always like to see anything readers produce.

As to the local groups, the only interest so far was from Norman Fryer (see letter in this issue). Come on you lot out there in Spectrum and SAM land, don't you want to be sociable? ***Ed.***

Dear Editor,

Since I first bought my SAM Coupé in 1990, I have been using it to print letters and various business forms, such as invoices and estimates. The printer I bought at the same time as the SAM, was a Star LC-10. This printer has served me well and I was pleased enough with the output until my friend's sons started a business and asked me if I could produce professional looking advertising stuff. My first reaction was to tell them that the SAM was up to it but the printer wasn't and for that matter the software I was using wasn't flexible enough (Outwrite! it's great for most jobs but not DTP'ing). In fact they already had a Star Printer giving better quality hard-copy than I could. What they wanted was the ability to produce colour leaflets with pictures and graphs.

So we got out ***FORMAT*** and had a look to see what software was available, I had not subscribed to ***FORMAT*** for about two years and so was well out of touch with what was out for SAM. The two DTP packages on offer were Steves Software SC_Word pro and PCG Desk Top Publisher. Now I may be wrong but something struck a cord, and I seem to remember a few problems with PCG and so we decided on Word pro.

Then it was a case of which printer to buy, a trip to Curry's seemed in order and off we went. Now in our local shop, there's this leech, as soon as you walk through the door he attaches himself to you. To say I hate that, is an understatement. Two minutes later in Dixons, I know they are one in the same, but what a difference in their approach to customers. After a bit of a look round at the machines on offer, we approached

an assistant, asked a few questions and was asked a few in return. Now I have to say here that when shopping for SAM, a dread comes over me because I know that the first question will be, "What machine do you have, Sir?" I may as well tell them it's a coffee machine, they've never heard of a SAM Coupé. There second question these days is, "Does it run Windows 95", I smile and tell them that it could probably break one if I was to throw it hard enough.

Anyway our assistant, bless her little cotton socks, did ask the questions but was very good when she was told, "I know a team that can get a printer running without any broken glass!" The printer we went for was a Canon BJC-4000, colour, bubblejet.

We had, prior to our shopping trip, phoned Steve of Steves Software and he had advised us about which type of printer his software supported. He has given me lots of very good advice, both before and after the purchase of the printer. To cut a long story short, the Word pro version for my Canon was not totally finished when I received it, but was workable. With a little help and a few POKE's from Steve I have been able to produce very high quality leaflets and a Newsletter for my mate's sons, in colour and using clipart which is either full colour or can be printed in one of three colour as well as Black. We are very pleased with the finished product.

That was the situation before Christmas, now just a few days after I have received the full completed version of SC_Word pro v.2.2., it's a cracker! No need to POKE colours, works like a professional DTP and is pretty friendly, to me anyway, and I'm no whizz-kid. Best of all, I know that if I do get into any trouble with it, just a phone call away, Steve will do his very best to sort out the problem. I can't thank him enough. Of course now I want information on scanners, digitisers and the like, so if you can help in this matter please let me know.

Yours Sincerely, Lester Piggott.

With the initials D.E. I was not quite sure whether the Lester at the bottom of your letter was right or not, but Jenny typed it in, so I better let the boss have her way.

Anyway, nice story, I'm sure readers will join, with me, in congratulating you on surviving a buying trip to Currys. Well done. ***Ed.***

Dear Editor,

In the December issue of ***FORMAT*** one of the letters asked about the possibility of connecting a Hard-disc to the Spectrum and you mentioned that the design of SAMs Hard-disc was based on a Spectrum version developed somewhere on the Continent!

There is of course no commercial Hard-disc interface for the Spectrum but the original design was as you stated for the Spectrum and developed by a very clever Dutch enthusiast named Roelof Koning. Of course he didn't just build the hardware without providing some software to drive it. What he did was patch his Hard-disc software into the OPUS system. Doing this he treats the Hard-disc as a collection of diskette images, not a full HDOS but it works and he has been using it for a long time now and I'm sure he wont mind me mentioning his address here in case anyone is interested in getting in touch with him. Though it must be emphasised that there is no commercial interface for the Spectrum, anyone contacting him must be prepared to build their own to his design which basically uses 10 TTL chips and so is best suited to someone with hardware experience. His full address is:-

Roelof Koning, Selwerder Str.26, NL-9717 GK Groiningen, The Netherlands.

I modified his design slightly and just

over a year ago built a version for the SAM and it was this information which I passed on to Nev Young of SD Software and has resulted in the really exciting step of a commercial interface for the SAM Coupé/Elite.

As well as my interface a friend of mine here in Germany Slawomir Grodkowski (Slawek) built a version based on mine and we have of course both written software to drive our Hard-discs. This includes a HDUTIL program to run nearly all SAM< software from the hard-disc without modification and an early Hard-disc DOS version which is, in a test version up and running. I have been in contact with Nev Young to see if he is interested in any of the things which have been developed here.

By the way I don't necessarily agree that the modern discs of 540MB plus are too big for the SAM. I keep and run all of my diskette magazines such as SAM Supplement etc., from the Hard-disc and these alone occupy over 100MB and growing every month.

I hope that this information might help one or two Spectrum owners with hardware experience to perhaps have a go at putting a Hard-disc onto their machines. Another possibility for any Hardware enthusiast would be to take the SAM version of the interface and make up a BUS adapter to convert it to the Spectrum bus, though they would still need software help from Roelof Koning to get it running. I can supply basic programming information for anyone testing a Hard-disc on the Spectrum.

Yours Sincerely, Ian D.Spencer.

Dear Editor,

In November you sent me a reminder for my subscription of ***FORMAT*** and I meant to reply at the time but never got round to it.

A couple of years ago I bought a SAM Coupé on the recommendation of Paul Walker who has written to your letters column occasionally, the computer being for my 10 year old son, Nicolas. Unfortunately in the year I had the SAM neither I nor my son could work out how to use it, beyond playing games. While Prince of Persia was good entertainment, it has to be said that the selection of games is extremely limited and the nearest retailer dealing with SAM games is 20 miles away in Bolton whereas retailers for PCs, Amigas, Megadrives etc are easy to visit in the town where I work.

It was not my intention to use the machine solely for games but for any other use the machine was simply incomprehensible. Contrary to expectations, ***FORMAT*** did nothing to help and in the 12 copies I received I understood the editorial page at the front, the letters page at the back and virtually nothing in between.

I discussed the problem with a couple of programmers working for Britannia Building Society and a customer services manager working for D2D (a supermarket barcode checkout system) and they advise me that the problem is that ***FORMAT*** is written by 'Teccies' for 'Teccies'. Within this context ***FORMAT*** is probably a well written trade journal but outside it, it is intelligible verbiage. Indeed the customer services manager is quietly thankful for people like ***FORMAT*** readers as it is the inability of 'Teccies' to relate to the rest of the world that has kept her in a job for ten years.

Seeing that my lad was getting nowhere with the SAM, his grandparents bought him a Sega megadrive for his birthday and I got him a copy of Jurassic Park for Christmas, which he greatly enjoys.

Paul Walker, (my nephew) is currently studying for an A level in Computer Science in Gloucester and hopes to do a degree in computer technology.

Life goes on, I sold the SAM for £50 to somebody who wanted a cheap word-processor.

Yours Sincerely, Adrian Walker.

I have never read such a sad letter in all my life. SAM, difficult to use? You cannot be serious.

SAM has one of the easiest Basics ever written. Based on Sinclair Basic, itself based on ANSI Basic, it is far easier to program in than Microsoft Basic and variations found on other home computers. SAM software is also cheap, especially compared to the consoles and PC type machines, and this is mainly because SAM software companies do not have to give a network of dealers 50%+ discount.

The part of this letter that I found most difficult to understand if the claim that you wanted to do more with SAM than just play games, and yet you have now sold a real computer and lumbered your son with a toy - because that is all a console can ever be - and a very expensive to run toy at that.

Now to the claim that ***FORMAT*** is being too technical. If you don't understand something it is easy to just side step the issue and put it down to articles being written for 'teccies' as you put it. However, a more realistic attitude would be "I don't understand it at the moment, so I still have something to learn. If others can understand then so can I." This is the attitude you should have taken. We at ***FORMAT*** are here to help you, and every other reader, understand. If something does not make sense then ask, we are here to answer. NO USER, Spectrum or SAM, should ever feel that they are alone. We have built our reputation since 1987 on the firm foundation that we are, ABOVE ALL ELSE, here to help people understand the machines they are using.

I'm sorry to hear that you have sold your SAM but at least it continues to be used. I hope that someday soon your son will gain an interest in computers and I'm sure that when he does he will come to see the SAM in its true light. ***Ed.***

Dear Editor,

First, let me wish you and the ***FORMAT*** team all the best for 1996.

Regarding M.Hayward's problem, POKE @7642 controls the current drive number, at least where G+DOS and Betados are concerned. This POKE affects all DOS operation except the snapshot functions, which take the drive number from POKE @6862 instead. To be thorough and cater for all possibilities, therefore, both locations should ideally be POKEd.

Hope this is of help.

Yours Sincerely, Miles Kinloch.

My thanks Miles. You have restored my faith in readers being able to come to the rescue of other readers. ***Ed.***

Dear Editor,

I would be interested in getting together with other SAM users in the Blackpool/Fylde area. Hopefully we can start a local user group, as you suggested in a recent editorial, and meet on a regular basis.

If you are interested then write to: Norman Fryer, 4, Freckleton St, Kirkham, Preston, Lancashire, PR4 2SP. Please do not attempt to ring me as I'm working most evenings. However if you drop me a line I will get in touch as soon as I can.

Yours Sincerely, Norman Fryer.

Letters may be shortened or edited to fit on these pages although we try to edit as little as possible.

This is YOUR letters page so it is up to you to fill it with interesting things. Come on, get writing, any subject even remotely related to computers. Just keep things as short as you can so we can fit in as many as possible each month. Please write clearly or type your letters. Send them to the address on page 3 or fax them to us on 01452 380890.

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